In the Claims:

1. (Original) A joint demodulation system for demodulating jointly received first and second signals, the joint demodulation system comprising:

a converter that is configured to downconvert the jointly received first and second signals; and

a joint demodulator that is responsive to the downconverted jointly received first and second signals, and that is configured to separately generate an estimated first frequency/first frequency error for the downconverted first signal and an estimated second frequency/second frequency error for the downconverted second signal;

wherein the converter is responsive to the estimated first frequency/first frequency error to downconvert the jointly received first and second signals; and

wherein the joint demodulator is responsive to a difference between the estimated second frequency/second frequency error and the estimated first frequency/first frequency error to jointly demodulate the downconverted jointly received first and second signals.

2. (Original) The system according to Claim 1 wherein the joint demodulator assumes that there is no first frequency error.

3. (Original) The system according to Claim 1 wherein the first signal is a desired signal and wherein the second signal is an interfering signal.

4. (Original) The system according to Claim 1 further comprising:

a first feedback loop that is coupled between the estimated first frequency/first frequency error and the converter, such that the converter downconverts the jointly received first and second signals based on the estimated first frequency/first frequency error; and

a second feedback loop that is coupled between the estimated second frequency/frequency error and the joint demodulator, such that the joint demodulator separately generates the estimated first and second frequency errors based on the estimated second frequency/second frequency error.

5. (Original) The system according to Claim 4 wherein the joint demodulator includes a first local automatic frequency control system that corrects for frequency offsets in the first signal at a first rate, and wherein the first feedback loop comprises:

a first long term automatic frequency control system that is coupled to the first local automatic frequency control system to correct for frequency offsets in the first signal at a second rate that is lower than the first rate, the first long term automatic frequency control system being coupled to the converter.

6. (Original) The system according to Claim 4 wherein the joint demodulator includes a second local automatic frequency control system that corrects for frequency offsets in the second signal at a first rate, and wherein the second feedback loop comprises:

a second long term automatic frequency control system that is coupled to the second local automatic frequency control system to correct for frequency offsets in the second signal at a second rate that is lower than the first rate, the second long term automatic frequency control system being coupled to the joint demodulator.

7. (Original) The system according to Claim 5 wherein the jointly received first and second signals are received over a series of repeating slots and are sampled more than once during each slot, wherein the first rate is once per sample and wherein the second rate is once per slot.

8. (Original) The system according to Claim 6 wherein the jointly received first and second signals are received over a series of repeating slots and are sampled more than once during each slot, wherein the first rate is once per sample and wherein the second rate is once per slot.

9. (Original) The system according to Claim 5 wherein the first local automatic frequency control comprises:

a phase error computer that is configured to compute a phase error in the first received signal at the first rate; and

a phase lock loop that is responsive to the phase error and is configured to compute a first frequency error therefrom at the first rate.

10. (Original) The system according to Claim 6 wherein the second local automatic frequency control comprises:

a phase error computer that is configured to compute a phase error in the second received signal at the first rate; and

a phase lock loop that is responsive to the phase error and is configured to compute a first frequency error therefrom at the first rate.

11. (Original) The system according to Claim 9 wherein the first long term automatic frequency control comprises:

a feedback loop that is responsive to the first frequency error and is configured to determine a second frequency error therefrom at the second rate.

12. (Original) The system according to Claim 10 wherein the second long term automatic frequency control comprises:

a feedback loop that is responsive to the first frequency error and is configured to determine a second frequency error therefrom at the second rate.

13. (Original) The system according to Claim 1 further comprising:

a single-user demodulator that is responsive to the downconverted jointly received first and second signals, and that is configured to estimate the first frequency error; and

a selector that selects the joint demodulator or the single-user demodulator.

14. (Original) The system according to Claim 13 wherein the estimated second frequency error is maintained constant when the selector selects the single-user demodulator.

15. (Original) A joint demodulation system for demodulating jointly received first and second signals, the joint demodulation system comprising:

a converter that is configured to downconvert the jointly received first and second signals;

a joint demodulator that is responsive to the downconverted jointly received first and second signals, and that is configured to separately generate an estimate of a first frequency/first frequency error for the downconverted first signal and an estimate of a second frequency/second frequency error in the downconverted second signal; and

wherein the joint demodulator is responsive to both the estimated second frequency/second frequency error and the estimated first frequency/first frequency error to jointly demodulate the downconverted jointly received first and second signals.

16. (Original) A joint demodulation system according to Claim 15 further comprising:

a first feedback loop that is coupled between the estimate of a first frequency/first frequency error and the joint demodulator, such that the joint demodulator demodulates the jointly received first and second signals based on the estimate of a first frequency/first frequency error; and

a second feedback loop that is coupled between the estimate of the second frequency error and the joint demodulator, such that the joint demodulator also demodulates the jointly received first and second signals based on the estimate of the second frequency/second frequency error.

17. (Original) The system according to Claim 15 wherein the first signal is a desired signal and wherein the second signal is an interfering signal.

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18. (Currently Amended) The system according to Claim ~~15~~ 16 wherein the joint demodulator includes a first local automatic frequency control system that corrects for frequency offsets in the first signal at a first rate, and wherein the first feedback loop comprises:

a first long term automatic frequency control system that is coupled to the first local automatic frequency control system to correct for frequency offsets in the first signal at a second rate that is lower than the first rate, the first long term automatic frequency control system being coupled to the joint demodulator.

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19. (Currently Amended) The system according to Claim ~~15~~ 16 wherein the joint demodulator includes a second local automatic frequency control system that corrects for frequency offsets in the second signal at a first rate, and wherein the second feedback loop comprises:

a second long term automatic frequency control system that is coupled to the second local automatic frequency control system to correct for frequency offsets in the second signal at a second rate that is lower than the first rate, the second long term automatic frequency control system being coupled to the joint demodulator.

20. (Original) The system according to Claim 18 wherein the jointly received first and second signals are received over a series of repeating slots and are sampled more than once during each slot, wherein the first rate is once per sample and wherein the second rate is once per slot.

21. (Original) The system according to Claim 19 wherein the jointly received first and second signals are received over a series of repeating slots and are sampled more than once during each slot, wherein the first rate is once per sample and wherein the second rate is once per slot.

22. (Original) The system according to Claim 18 wherein the first local automatic frequency control comprises:

a phase error computer that is configured to compute a phase error in the first received signal at the first rate; and

a phase lock loop that is responsive to the phase error and is configured to compute a first frequency error therefrom at the first rate.

23. (Original) The system according to Claim 19 wherein the second local automatic frequency control comprises:

a phase error computer that is configured to compute a phase error in the second received signal at the first rate; and

a phase lock loop that is responsive to the phase error to compute a first frequency error therefrom at the first rate.

24. (Original) The system according to Claim 22 wherein the first long term automatic frequency control comprises:

a feedback loop that is responsive to the first frequency error and is configured to determine a second frequency error therefrom at the second rate.

25. (Original) The system according to Claim 23 wherein the second long term automatic frequency control comprises:

a feedback loop that is responsive to the first frequency error to determine a second frequency error therefrom at the second rate.

26. (Original) The system according to Claim 15 further comprising:

a single-user demodulator that is responsive to the downconverted jointly received first and second signals, and that is configured to provide the estimate of the first frequency/first frequency error; and

a selector that selects the joint demodulator or the single-user demodulator.

27. (Original) The system according to Claim 26 wherein the second feedback loop maintains the estimate of the second frequency error constant when the selector selects the single-user demodulator.

28. (Original) A demodulation system for jointly received first and second signals, comprising:

a joint demodulator that is configured to generate an estimated first frequency/first frequency error for the first signal and an estimated second frequency/second frequency error for the second signal;

a first long term automatic frequency control that is responsive to the estimated first frequency/first frequency error, wherein the joint demodulator is responsive to the first long term automatic frequency control; and

a second long term automatic frequency control that is responsive to the estimated second frequency/second frequency error, wherein the joint demodulator is responsive to the second long term automatic frequency control.

29. (Original) The system according to Claim 28 further comprising:

a subtractor that is responsive to the first and second and second automatic frequency controls, wherein the joint demodulator is responsive to the subtractor.

30. (Original) The system according to Claim 28 further comprising:

a converter that is configured to downconvert the jointly received first and second signals;

wherein the joint demodulator that is responsive to the downconverted jointly received first and second signals; and

wherein the converter also is responsive to the first long term automatic frequency control.

31. (Original) The system according to Claim 28 wherein the first signal is a desired signal and wherein the second signal is an interfering signal.

32. (Original) The system according to Claim 28 wherein the joint demodulator includes a first local automatic frequency control that corrects for frequency offsets in the first signal at a first rate, and wherein the first long term automatic frequency control is coupled to the first local automatic frequency control to correct for frequency offsets in the first signal at a second rate that is lower than the first rate.

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33. (Currently Amended) The system according to Claim 28 wherein the joint demodulator includes a second local automatic frequency control that corrects for frequency offsets in the second signal at a first rate, and wherein the second long

term automatic frequency control is coupled to the ~~first~~ second local automatic frequency control to correct for frequency offsets in the ~~first~~ second signal at a second rate that is lower than the first rate.

34. (Original) The system according to Claim 32 wherein the jointly received first and second signals are received over a series of repeating slots and are sampled more than once during each slot, wherein the first rate is once per sample and wherein the second rate is once per slot.

35. (Original) A joint demodulation method for demodulating jointly received first and second signals, the joint demodulation method comprising:

downconverting the jointly received first and second signals; and

separately generating an estimated first frequency/first frequency error for the downconverted first signal and an estimated second frequency/second frequency error for the downconverted second signal;

wherein the downconverting the jointly received first and second signals is responsive to the estimated first frequency/first frequency error; and

wherein the separately generating an estimated first frequency/first frequency error for the downconverted first signal and an estimated second frequency/second frequency error for the downconverted second signal is responsive to a difference between the estimated second frequency/second frequency error and the estimated first frequency/first frequency error.

36. (Original) The method according to Claim 35 wherein the first signal is a desired signal and wherein the second signal is an interfering signal.

37. (Original) The method according to Claim 35 wherein the separately generating an estimated first frequency/first frequency error for the downconverted first signal and an estimated second frequency/second frequency error for the downconverted second signal comprises:

correcting for frequency offsets in the first signal at a first rate; and

correcting for frequency offsets in the frequency offset corrected first signal at a second rate that is lower than the first rate, to thereby estimate the first frequency/first frequency error.

38. (Original) The method according to Claim 35 wherein the separately generating an estimated first frequency/first frequency error for the downconverted first signal and an estimated second frequency/second frequency error for the downconverted second signal comprises:

correcting for frequency offsets in the second signal at a first rate; and

correcting for frequency offsets in the frequency offset corrected second signal at a second rate that is lower than the first rate, to thereby estimate the second frequency/second frequency error.

39. (Original) The method according to Claim 38 wherein the jointly received first and second signals are received over a series of repeating slots and are sampled more than once during each slot, wherein the first rate is once per sample and wherein the second rate is once per slot.

40. (Original) The method according to Claim 37 wherein the correcting for frequency offsets in the first signal at a first rate comprises:

computing a phase error in the first received signal at the first rate; and

computing a first frequency error therefrom at the first rate.

41. (Original) The method according to Claim 35 further comprising:

estimating the first frequency error in the downconverted first signal; and

selectively performing the separately generating an estimated first frequency/first frequency error for the downconverted first signal and an estimated second frequency/second frequency error for the downconverted second signal or the estimating the first frequency error in the downconverted first signal.

42. (Original) The method according to Claim 41 further comprising maintaining the estimated second frequency/second frequency error constant in

response to the selectively performing the estimating the first frequency error in the downconverted first signal.

43. (Original) A joint demodulation method for demodulating jointly received first and second signals, the joint demodulation method comprising:

downconverting the jointly received first and second signals;

separately generating an estimate of a first frequency/first frequency error for the downconverted first signal and an estimate of a second frequency/second frequency error in the downconverted second signal;

wherein the separately generating an estimated first frequency/first frequency error for the downconverted first signal and an estimated second frequency/second frequency error for the downconverted second signal is responsive to both the estimated second frequency/second frequency error and the estimated first frequency/first frequency error.

44. (Original) The method according to Claim 43 wherein the first signal is a desired signal and wherein the second signal is an interfering signal.